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EXAMINER
CHANKONG, DOHM

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	09/844,856	GARCIA-LUNA-ACEVES ET AL.
	Examiner	Art Unit	
	DOHM CHANKONG	2452	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>09 February 2010</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1,3-9 and 11-14</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1,3-9 and 11-14</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/9/10, 4/14/2010</u>.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This non-final action is in response to Applicant's amendment filed on 2/9/2010.

Applicant amends claims 1, 7, and 9 and previously cancelled claims 2 and 10. Accordingly,

claims 1, 3-9, and 11-14 are presented for further examination.

I.   OATH/DECLARATION

The full name of each inventor (family name and at least one given name together with

any initial) has not been set forth.

II.   INFORMATION DISCLOSURE STATEMENT

The examiner has considered the information disclosure statements filed on 4/14/2010

and 2/9/2010.

III.   RESPONSE TO ARGUMENTS

In the previous action, the examiner had indicated that claims 1, 3-9, and 11-14 would be

allowable if amended to overcome the § 112 rejections. In view of this suggestion, Applicant

amended the claims in a manner to overcome said § 112 rejections.

The indication of allowability was based in part on the limitation directed to providing a

first type-of-service distances between the information object repository and the client between

the neighboring routers. The examiner believed that the prior art did not disclose providing this

type-of-service distance between routers.

However, after carefully reviewing the references, the examiner found the same feature in

the *Grove* reference. For example, *Grove* discloses routers that store a distance between a client

and the server (i.e., repository) [column 8 «lines 60-66»: "...combine the network distance from

client 10 to C-node 12 with the network distance from C-node 12 to server 16 in order to

estimate the total communication time for a request to travel from the client 10 to the server 16"].

    Grove's server reads on Applicant's information object repository. Based on the

foregoing citation, *Grove*'s teaching of a router that stores the distance between the server and the

client reads on the Applicant's claimed first type-of-service distance.

    Contrary to the claimed invention, *Grove* then discloses communicating this information

to a mapping device instead of neighboring routers [column 16 «lines 22-33»: "A mapping

device may collect information as to the network distance between various pairs of computers"].

However, *Kavak* teaches another implementation of sending the mapping information to

neighboring routers [column 5 «lines 12-26»: *Kavak* discloses each router maintaining distance

values to a server and forwarding this information to its neighbors].

    The combination of *Grove* and *Kavak* therefore read on the new claim limitation.

Therefore, the previous indication of allowability is withdrawn and the rejection is further

discussed below in section IV.

IV.   ALLOWABLE SUBJECT MATTER

    In the interests of expediting the prosecution of this case, the examiner would like to

point out subject matter found in Applicant's provisional application, 60/200401, which if

incorporated into the independent claims would likely distinguish the claims over the prior art.

Specifically, at pages 21-22, the provisional describes a WILD update message that is used for

communicating the mappings of client address *ranges* to neighboring routers, where the WILD

update message contains three components: (1) a basic routing update; (2) a list of TOS distance

from web caches to destinations; and (3) a list of TOS distance from redirecting routers to

destinations.

In examiner's view, the use of this message to communicate the mappings from a

redirecting router to its neighboring routers is patentably distinct over the prior art. If this feature

was incorporated into the independent claims to further describe the inter-router communication

process, the examiner believes that the claims would be in condition for allowance.

If Applicant decides to amend the claim in the foregoing fashion, the examiner advises

filing a terminal disclaimer to avoid a double patenting rejection with application 09/844759

which was allowed for similar reasons. If Applicant decides to amend the claims in the

foregoing manner, filing the terminal disclaimer along would expedite prosecution of the case.

V.   CLAIM REJECTIONS - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

A.   Claim Interpretation

Applicant's independent claims recite a WILD protocol that runs on top of a

Transmission Control Protocol. Because Applicant's specification does not describe the WILD

protocol but instead references provisional application 60|200401, Applicant's WILD protocol is

interpreted consistent with that provisional application. The provisional describes a protocol that

determines "distance" between network devices using metrics such as average delay, average

processing delay, reliability of path, and availability of the path [pgs. 12-13].

   McCanne (USP 6415323) describes using a local monitoring protocol to map a client to

another information object repository by utilizing the protocol to determine the candidate service

node based on load and availability information; this functionality corresponds to the claimed

WILD protocol [column 16 «lines 13-17»]. The monitoring protocol keeps track of various

metrics such as availability of the path [column 17 «lines 48-58»]. *McCanne* describes selecting

a network device that has the best network characteristics and therefore is the "closest" to the

ARN. Thus, *McCanne*'s local monitoring protocol is interpreted as Applicant's claimed WILD

protocol. The *McCanne* reference discloses the same technology as *McCanne* and therefore the

above discussion applies with equal force to *McCanne*. *McCanne* refers to CDNs which

correspond to *McCanne*'s ARNs as the CDNs perform the same functionality.

   **B.   Claims 1, 3-6, 7-9, 11, 13, and 14 are rejected under 35 U.S.C § 103(a) as
           being unpatentable over *McCanne* et al, U.S Patent No. 6.785.704
           ["*McCanne*"], in view of *Partridge* et al, "Host Anycasting Service"
           ["*Partridge*"], in further view of *Grove* et al, U.S. Patent No. 6.820.133
           ["*Grove*"], in further view of *Kavak* et al, U.S. Patent No. 6.687.731
           ["*Kavak*"].**

   The examiner cited *Kavak* in the PTO-892 filed on 8/17/2004.

   Claims 1, 7, and 9

   McCanne as modified by *Partridge*, *Grove*, and *Kavak* discloses a method, comprising:

      receiving, at an information object repository, a request for an information object at

an address identified by a uniform resource locator (URL) [column 23 «lines 14-17» | column 25

«lines 57-66» where : *McCanne*'s cache corresponds to a repository]; and

mapping the URL to a corresponding anycast address for the information object [column 23 «lines 14-17 and 56-60» | column 26 «lines 25-27» where : the cache resolves the URL to an anycast address for the web servers that have the requested content], wherein the information object repository is selected according to specified performance metrics by mapping an address of the client to one or more addresses of the information object repositories wherein the mapping is performed by executing a Web Information Locator by Distance (WILD) protocol that runs on top of a transmission control protocol (TCP) [Figure 18 : *McCanne*'s invention running on top of TCP/IP | column 27 «lines 1-13» | also see the response to Applicant's arguments above];

determining whether the anycast address can be resolved into a real unicast address that is uniquely identified for the information object in the Internet [column 20 «lines 21-37»];

resolving the anycast address for the information object to the unicast address for the information object, if the corresponding anycast address can be resolved into the unicast address [column 20 «lines 21-37» | column 21 «lines 9-16» | column 23 «lines 54-67»];

returning a failure if the anycast address cannot be resolved into the unicast address [column 14 «lines 46-54» | *McCanne* does not explicitly disclose returning a failure but he does disclose relying on DNS. It is well known in the art that if a DNS is unable to resolve addresses, the DNS server will return an error to the requesting client. Thus, one of ordinary skill in the art would have reasonably inferred this functionality into *McCanne*'s DNS servers as well]; and

obtaining a copy of the information object at the corresponding unicast address [column 23 «lines 54-67»].

McCanne, however, does not expressly disclose three claimed features:

(1) the resolving of the anycast address comprising sending an anycast resolution query to the anycast address according to an anycast resolution protocol;

(2) mapping an address of the client to one or more addresses of routers that have a best type-of service distance to the address of the client between the routers where the routers store a first distance from a repository to an address of a client and a second distance from a router to the address of the client; and

(3) wherein the routers communicate to each other the type-of-service distance to the address of the client.

However, all three features were well known in the art at the time of Applicant's invention.

        1.   *Partridge* discloses resolving an anycast address by sending a query according to an anycast resolution protocol.

Partridge is directed towards an internet anycasting service for IP [pg. 1, abstract]. *Partridge* discloses a DNS resolver resolving an anycast address by sending a request (query) to the anycast address [pg. 2, ¶1 : "DNS resolvers…could send a query to a well known DNS anycast address | pg. 3, ¶2 : "…send DNS queries to the DNS anycast address"]. It would have been obvious to one of ordinary skill in the art to incorporate *Partridge*'s anycast address protocol into *McCanne*'s anycast system. *Partridge*'s teachings provide would improve *McCanne*'s system by enabling DNS resolvers to properly resolve anycast addresses by sending queries to anycast addresses.

2.   <u>*Grove* teaches mapping an address of the client to an address of a router
that have a best type-of-service distance to the address of the client
between the routers where the routers store a first distance from a
repository to an address of a client and a second distance from a router to
the address of the client.</u>

Grove is directed to a method for increasing the performance of network traffic over the

Internet [abstract]. To achieve this goal, *Grove* utilizes a mapping feature that maps an address

of a client to an information object repository using anycast [Figure 11 | column 19 «lines 15-37»]

where : *Grove*'s server's read on the claimed information object repository] as well as mapping

the client's address to a router address that has a best type-of service distance to the client's

address [column 32 «lines 41-53» where : *Grove*'s c-node reads on the claimed router since the

c-node connects the client to the object repository].

Grove further discloses that his c-nodes execute a protocol between the c-nodes to

determine the best distance between the servers and the clients [column 8 «lines 57-67»: "…one

might combine the network distance from client 10 to C-node 12 with the network distance from

C-node 12 to server 16 in order to estimate *total communication time* for a request to travel from

the client 10 to the server 16"]. This distance between the server and the clients reads on

Applicant's claimed first distance. The distance between the c-node and the client reads on

Applicant's claimed second distance.

It would have been obvious to one of ordinary skill in the art to have modified

McCanne's anycast system with *Grove*'s mapping features. *Grove*'s features improve on

McCanne's system by mapping the client to both the repository as well as the routers within the

network which improve the network's performance by selecting the most efficient network path

[see *Grove*, column 7 «lines 45-51»].

3.   _Grove_ and _Kavak_ disclose routers communicating to each other the first
distance from the repository to the address of the client.

Finally, as to (3), _Kavak_ is directed to a invention for load-sharing a plurality of servers

that belong to an anycast group [abstract]. Like _McCanne_, _Kavak_ is interested in selecting the a

repository closest to a requesting client [column 2 «lines 1-3»]. _Kavak_ further discloses routers

that communicate to other routers distance information between the servers and the clients in

order to select the nearest server [column 5 «lines 12-26»: _Kavak_ discloses each router

maintaining distance values to a server and forwarding this information to its neighbors].

The combination of _Grove_ and _Kavak_ therefore discloses communicating first distances

between client and the server (taught by _Grove_) to neighboring routers (taught by _Kavak_) as

claimed. See also the foregoing Response to Arguments, section III.

It would have been obvious to one of ordinary skill in the art to have modified

McCanne's system to include the distance sharing functionality taught by _Kavak_. Such a

modification is an example of applying a known technique (_Kavak_'s routers forwarding distance

information to neighboring routers) to a known system (_McCanne_'s anycast system) ready for

improvement to yield predictable results (_McCanne_'s routers now share distance information

with other another to have a more complete view of the network). _See MPEP § 2143_.

Claims 7 and 9 are rejected for at least the same reasons set forth for claim 1.

Claim 3

McCanne as modified by _Partridge_, _Grove_, and _Kavak_ discloses the method of claim 1

further comprising sending the information object to the client [column 23 «lines 14-23 and 54-

63»].

Claims 4 and 11

McCanne as modified by *Partridge*, *Grove*, and *Kavak* discloses the method of claim 3

wherein the request is received at an information object repository that is topologically closer to

the client than any other information object repository [column 13 «line 45»].

Claims 5 and 13

McCanne as modified by *Partridge*, *Grove*, and *Kavak* discloses the method of claim 4

wherein the information object repository is selected according to specified performance metrics

[column 21 «lines 58-62»].

Claims 6 and 14

McCanne as modified by *Partridge*, *Grove*, and *Kavak* discloses the method of claim 5

wherein the performance metrics comprise one or more of: average delay from the selected

information object repository to a source of the request, average processing delay at the selected

information object repository, reliability of a path from the selected information object

repository, available bandwidth in said path, and loads on the selected information object

repository [column 21 «lines 58-62»].

Claim 8

McCanne as modified by *Partridge* and *Grove* discloses the information object repository

of claim 8 being further configured to advertise the anycast address using a network layer

anycast routing protocol [column 15 «lines 9-14»].

VI.   CONCLUSION

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to DOHM CHANKONG whose telephone number is (571)272-
3942. The examiner can normally be reached on Monday to Friday [10 am - 6 pm].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Thu Nguyen can be reached on (571)272-6967. The fax phone number for the
organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent
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information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DOHM CHANKONG/
Primary Examiner, Art Unit 2452